

REMARKS

This is a full and timely response to the non-final Office Action mailed April 19, 2006. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

Present Status of Patent Application

Upon entry of the amendments in this response, claims 22, and 24-28 remain pending in the present application and claims 9-11 and 16-18 remain withdrawn from consideration. Withdrawn claims 9 and 16-18 have been currently amended with no addition of new material, to make withdrawn claims 9-11 and 16-18 directly or indirectly dependent on pending independent claim 22. Furthermore, claims 22, 24, and 26-28 have been currently amended with no new material being added and claims 1-8, 12-15, 19-21, and 23 are canceled. Applicants have canceled these claims merely to reduce the number of disputed issues and to facilitate early allowance and issuance of other claims in the present application. Applicants reserve the right to pursue the subject matter of this claim in a continuing application, if Applicants so choose, and do not intend to dedicate the canceled subject matter to the public. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

Claim Rejections under 35 U.S.C. §103(a)

a) Claims 1-2, 12, and 19-22

Statement of the Rejection

Claims 1-2, 12 and 19-22 are rejected under 35 U.S.C. §103(a) as being obvious over Sakamoto et al in view of Freyman et al.

Response to the Rejection

Claims 1-2, 12, and 19-21

Claims 1-2, 12, and 19-21 have been currently canceled. Consequently, Applicants respectfully assert that the rejection of these claims has been rendered moot.

Claim 22

The MPEP provides several guidelines for rejecting a claim under 35 U.S.C. 103(a). Specific reference is made to MPEP 706.2(j) *Contents of a 35 U.S.C. 103 Rejection*, which states in pertinent part:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.
(Emphasis added)

Currently amended claim 22 includes certain claim elements drawn from rejected claim 23, which is currently canceled. Specifically, currently amended claim 22 includes: "providing a slug of an electrically conductive material," and "squeezing the slug into the through hole whereby the slug is retained in the through hole by friction." Applicants respectfully assert that at least these aspects of currently amended claim 22 are not taught or disclosed by the cited prior art. Consequently, Applicants respectfully assert that a rejection of currently amended claim 22 under 35 U.S.C 103(a) would be improper because a *prima facie* case of obviousness cannot be established in conformance with MPEP 706.2(j). Further remarks for substantiating Applicants' assertion is provided below.

In rejecting claim 23 (relevant parts of which are now incorporated into claim 22), the Office action states: "With respect to claim 23, Asai column 35, lines 35-36, teaches to squeeze resin filter into a through hole. It would have been obvious to squeeze a slug of the Freyman paste into the Freyman through hole in the same manner, in order to get the paste into the hole." Attention is drawn to paragraph [0050] of Applicants' specification, which is reproduced below for easy reference:

Figure 5B shows interconnecting elements 520-523 being introduced into through holes 516-519, respectively, to fill the through holes. Interconnecting elements 520-523 are slugs of conductive material having a diameter smaller than the diameter of the through holes and a length larger than the thickness of wafer 510. In an embodiment, the material of the interconnecting elements is tungsten. A squeezing process is used to fill the through holes with the interconnecting elements. The squeezing process introduces the interconnecting elements into the through holes and then reduces the length and increases the diameter of the interconnecting elements. The squeezing process leaves the ends of the interconnecting elements approximately flush with respective major surfaces 512 and 514, and the interconnecting elements retained in the through holes by friction. An adhesive may additionally or alternatively be used to retain the interconnecting elements in the through holes.
(Emphasis added)

Applicants respectfully assert that the slugs described above will be unambiguously interpreted by persons of ordinary skill in the art, using the generally-accepted definition of the term “slug” in various dictionaries, as solid objects that are press-fitted into through holes and held in the through holes by friction. This aspect has been clearly illustrated in Applicants’ FIG. 5B, which shows slugs 520-523 being inserted into the through holes. It is illogical to believe that slugs 520-523 of FIG. 5B could be in the form of a paste (“Freyman paste”) as alleged in the Office action, moreso when Applicants’ description above states that an “adhesive may additionally or alternatively used to retain the interconnecting elements in the through hole.” Obviously, such an adhesive cannot be used to retain a paste such as the paste described in Freyman.

For at least the reason described above, Applicants respectfully assert that claim 22 is allowable and request withdrawal of the rejection followed by allowance of claim 22.

b) Claims 4-7

Statement of the Rejection

Claims 4-7 are rejected under 35 U.S.C. §103(a) as being unpatentable over the references as applied to claims 1-2, 12, and 19-22 above, and further in view of Kobayashi.

Response to the Rejection

Claims 4-7

Claims 4-7 have been currently canceled. Consequently, Applicants respectfully assert that the rejection of these claims has been rendered moot.

c) Claim 8

Statement of the Rejection

Claim 8 is rejected under 35 U.S.C. §103(a) as being unpatentable over the references as applied to claims 1-2, 12, and 19-22 above, and further in view of Kobayashi and Rapoport.

Response to the Rejection

Claim 8

Claim 8 has been currently canceled. Consequently, Applicants respectfully assert that the rejection of this claim has been rendered moot.

d) **Claims 23-28**

Statement of the Rejection

Claims 23-28 are rejected under 35 U.S.C. §103(a) as being unpatentable over the references as applied to claims 1-2, 12, and 19-22 above, and further in view of Asai et al.

Response to the Rejection

Claim 23

Claim 23 has been currently canceled. Consequently, Applicants respectfully assert that the rejection of this claim has been rendered moot.

Claims 24-28

Because currently amended claim 22 is allowable, claims 24-28 that depend directly or indirectly on claim 22 are also allowable as a matter of law. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Consequently, Applicants respectfully request withdrawal of the rejection, followed by allowance of claims 24-28.

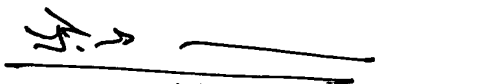
Prior Art Made of Record

The prior art made of record has been considered, but is not believed to affect the patentability of the presently pending claims.

CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicant respectfully submits that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that at least claims 22 and 24-28 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. Furthermore, Applicants courteously request allowance of withdrawn claims 9-11 and 16-18 in light of allowable claims 22 and 24-28 from which they are now dependent. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned representative at (404) 610-5689.

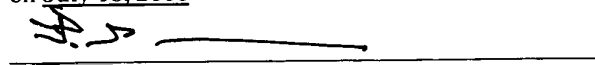
Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, postage prepaid, in an envelope addressed to: Commissioner for Patents, P. O. Box 1450, Alexandria, VA, 22313-1450, on July 18, 2006



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